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ABSTRACT

This discussion of different approaches to clarifying problems in the instructional development process defines what a problem is and the types of problems typically faced by instructional developers; presents a rationale for suggesting the use of evaluation models for finding development problems; and suggests ways in which the use of a particular evaluation approach may result in the finding of different problems. It is argued that problems are generated to be solved in instructional development (ID) and that needs assessment is the stage in the ID process where a problem is identified. Four factors that influence the ways in which instructional developers solve problems are suggested: (1) there is a set of rules under which the activity must operate; (2) there is ultimately one desired outcome--the problem that has been identified must be solved; (3) while there are rules, there are, nevertheless, many ways to solve an instructional development problem; and (4) it is clear when the instructional development problem has been solved. The role of values in the problem clarification process is briefly discussed, and six basic approaches to evaluation that may offer instructional developers some useful insights are reviewed: objectives oriented, management oriented, consumer oriented, expertise oriented, adversary oriented, and naturalistic and participant oriented. Possible uses of each of these approaches in needs assessment are suggested, and suggestions for further research conclude the paper. (11 references) (BBM)

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**Title:**

# Problem Identification Techniques: So What's the Problem

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## Introduction

Problem identification is arguably the most crucial aspect of the needs assessment process in instructional development. Yet little attention has been given by instructional developers to clearly delineating what is meant by the term 'problem'. This is troublesome given that many definitions of the word problem exist. For example, the *Oxford English Dictionary* describes no fewer than six different kinds of problems. This suggests that the way one identifies a problem shapes the way one views the problem solving process, and in turn influences the kinds of problems found during a needs assessment. We contend that getting clearer about how one identifies problems is crucial for a field that has been described as being primarily a problem solving process (AECT, 1977, Romiszowski,1981).

A potentially useful approach to problem clarification may be the use of evaluation models. There are many similarities between program evaluation and needs assessment in instructional development. Many of the functions that occur in program evaluation have, historically at least, occured in needs assessment. Clients are consulted, data is gathered, reports are written, and recommendations made. But there is one important and potentially useful difference – evaluators are often explicit about the value perspective they bring to a project through the evaluation model(s) they consciously adopt. A closer examination of these models may yield useful frameworks for instructional developers as they tackle a needs assessment.

The purpose of this paper, then, is to develop different approaches to clarifying problems in the instructional development process. This will be done by: 1) defining what a problem is and what types of problems typically face instructional developers; 2) presenting a rationale for suggesting the use of evaluation models for finding development problems; 3) suggesting how the use of a particular evaluation approaches may result in the finding of different problems.

## What Is A Problem?

The concept of problem is very complex. Although we often take its meaning for granted. Academicians tend to describe the term in ways that may be foreign to us. One example of this is Clark's (1979) definition:

> a situation resulting from the interaction or juxtaposition of factors which yields a perplexing or enigmatic state, an undesirable consequence, or conflict. The juxtaposition can take the form of provocative exceptions, contradictory evidence, a knowledge void, or a theoretical action-knowledge conflict (as cited in Jorgenson,1981 p.9).

The difficulty with a definition like Clark's is that it is not easily understood by practising instructional developers or their clients and is open to various interpretations. Clearly understanding some of these interpretations would be helpful for individuals engaged in the instructional development process. A dictionary definition is a useful starting point in identifying the different interpretations of the term problem.

The *Oxford English Dictionary* (1989), for example, identifies six kinds of problems:

> problem - a thing thrown or put forward; hence, a question propounded for a solution, a set task, a problem.
>
> 1. A difficult or puzzling question proposed for a solution; a riddle; an enigmatic statement.
>
> 2. a. A question proposed for academic discussion or scholastic disputation.
>
> b. *Logic*. The question (expressed, or, more usually, only implied) involved in a syllogism, and of which the conclusion is the only solution or answer.
>
> 3. a. A doubtful or difficult question; a matter of inquiry, discussion, or thought; a question that exercises the mind.
>
> b. Problematic quality; difficulty of solution.
>
> c. As the second element in various Combs. and collocations describing: (a) a supposedly insoluble quandary affecting a specified group of people or a nation; (b) a real or imagined chronic personal difficulty, *as credibility, drink, health, weight problem*.
>
> d. In various colloq. phrases, as *no problem*, simple easy, 'the question does not arise'; *that's your* (*his*, etc.) *problem*, used to disclaim responsibility or connection.
>
> 4. *Geom*. A proposition in which something is required to be done: opposed to *theorem*..
>
> 5. *Physics* and *Math*.. A question or inquiry which starting from some given conditions investigates some fact, result, or law.
>
> 6. *Chess* . An arrangement of pieces upon the chessboard for play in accordance with the rules of the game or other prescribed conditions, in which the player is challenged to discover the method of accomplishing a specified result.

The number and substance of these definitions suggests that there are different kinds of problems and different uses of the word 'problem'. If one accepts that there are different kinds of problems, and different uses of the word problem, significant questions arise,'what problems are most likely to find their way into the practice of the professional who solves problems?' Are professionals who solve problems aware that different kinds of problems exist? Are they trained to solve different kinds of problems? Are certain kinds of professions only concerned with particular kinds of problems?

It would seem that all professionals must address, at one time or another, problems of 'academic discussion and scholastic disputation' and 'difficult questions that exercise the mind'. Some professionals, such as medical doctors or architects, look

to attain some specified result, although, it would seem that they have a number of different avenues or methods available to do this (definition number 6). Others, such as chemists or physicist, seek to investigate a mathematical or scientific law or result (definition number 5).

Why should instructional developers be concerned with the concept of problem? Simply put, because problem solving is an integral part of what instructional developers do (Romiszowski, 1981; Dick & Carey, 1990). This emphasis can be clearly seen in the most recent definition put forth by the Association for Educational Communications and Technology, the largest professional organization for instructional developers in the United States:

> Educational technology is a complex, integrated process, involving people, procedures, ideas, devices and organization, for analyzing *problems* and devising, implementing, evaluating and managing solutions to those *problems*, involved in all aspects of human learning [emphasis added] (AECT,1977, p. 1).

**How Instructional Developers See Problems**

But what kind of problems do professional instructional developers typically deal with? It is our contention that the field of instructional development treats problems as essentially solvable. Problems are, in fact, generated to be solved in instructional development and needs assessment is the stage in the instructional development process where a problem is identified. Kaufman and English outline important considerations in a needs assessment:

> the formal harvesting, collection, and listing of needs in priority order, and selecting the needs of highest priority for action. This process includes the partners in planning, which in education are learners, the implementers, and the society. It requires that there be a consensus of the partners in the prioritization of needs, and it strongly urges that the process include any additional external referent of survival and contribution when determining need priorities. (Kaufman and English,1979,pp. 343-344).

But what exactly is a need? The most common definition of 'need' in the literature of educational technology and instructional development is that it is a discrepancy or gap between the current situation and a desired one-"a discrepancy between what is and what is required" (Kaufman,1968, p. 415). Problems in instructional development are needs. Needs are gaps in performance outcomes, and these outcomes are to be stated in measurable terms (Kaufman & English,1979). Kaufman and English relate problems to needs as:

> Problems are needs selected for closure - if there is no gap, there is no problem. The problem identification, properly done, starts with an appropriate assessment of needs. A Needs Assessment is the determination of documentable and important gaps between current outcomes and desired outcomes, and the placing of those gaps in priority order for closure (Kaufman & English, 1979, p.24)

Following this line of thinking, problems in instructional development are not questions for scholarly inquiry or academic disputation. The identification of a problem in instructional development is a call for action (closure); it requires that

something be done. Further, it is a call for a technical sort of action -- action following a set of pre specified guidelines. Viewed in this way, instructional development problems are perhaps most akin to the Oxford English Dictionary problem type four "a proposition in which something is required to be done" and type six "an arrangement of pieces upon the chessboard for play in accordance with the rules of the game or other prescribed conditions, in which the player is challenged to discover the method of accomplishing a specified result".

The latter definition of problem, one couched in the analogy of a chess game, is useful in helping understand how instructional developers view the problem solving process. The analogy suggests four things about the way problems are solved by instructional developers. 1) There are a set of rules under which the activity must operate. 2) There is ultimately one desired outcome: the problem that has been identified must be solved. 3) While there are rules, there are nevertheless, many ways to solve an instructional development problem. 4) It is clear when the instructional development problem has been solved.

**The Problems With Traditional ID Problems**

There are two important ways in which the chess analogy to instructional development breaks down. One is that, in chess the outcome is measurable. It is easily ascertained, according to the rules, whether one has won, lost, or drawn. In instructional development, outcomes are construed so that they can be measured. This requires interpreting the situation so that the desired state can be measured.

The other is that the problem of chess exists before two players begin the game. It is a given. It is not open to the interpretation of the players. The problem exists *a priori*. In contrast, however, problems in instructional development are not a given. They are consciously generated *during* the instructional development process. An instructional development problem is socially construed. It is generated by the individuals engaged in the instructional development process. An instructional development problem, therefore, can not exist *a priori*.

Concerns have been raised about the activities and intentions of needs assessment. First, can needs assessment be responsive to the intent of the planning partners or clients if it is converting the data and information that was gathered to determine educational goals into precise and measurable objectives? It seems that a certain degree of 'distortion' is inevitable when operationalizing goals into measurable objectives (Jorgenson,1981). Can the intent of the planning partners or clients be truly represented and maintained after this process has taken place?

Even Robert Mager, the person who may be most responsible for making the use of behavioral objective popular, suggests that goals cannot easily be translated into measurable objectives:

> Though it is not always possible to describe an intent clearly, and though it is not always possible to determine whether an important outcome has been achieved, instruction can only be considered elegant to the extent that it effectively and efficiently facilitates achievement of instructional intent.(p.20, as cited in Jorgenson,1981)

If the original intent of the planning partners or clients is distorted, how can instructional development meet their real needs? When faced with this question

instructional developers often appeal to a consensus of the planning partners. Gaining consensus among the individuals engaged in the instructional development process may be difficult. Can the instructional developer gain a consensuses about output of the information interpretation process? Even if such a consensus were possible to attain (gaining a similar interpretation), can the instructional developer expect to gain a consensus on the prioritization of these interpretations (a question of attaining agreement on values)? Guba and Lincoln argue that:

> ...recent writings in responsive, naturalistic modes of inquiry raise the issue that multiple realities and pluralistic value perspectives render consensus an unreal expectation. If it is achieved, it may be an inauthentic construction superimposed upon the complex realities of the situation. Certainly generalizations are possible, and essential to decision-making and action, but it is important to acknowledge that generalizations about human needs, wants and goals have inextricably subjective, time-bound dimensions to them. "Needs have no objective reality." (Jorgenson,1981 p. 206 citing Guba and Lincoln, 1981, p.1)

This idea applies to both the planning partners and the instructional developer. "Needs are not objectively 'real' and open to discovery by scientific,...value-free methodologies." (Guba and Lincoln,1981, p.1). Needs are grounded in the value systems of the planning partners or clients and the instructional developer. If a need is the 'gap' between where we are and where we want to be, then a need is little more than a way of saying we want something. What we want is, presumably, something we value.

Guba and Lincoln insist that:

> It is time for reassessment of needs assessment, and for the acceptance of a methodology which deals with the values issue squarely, takes values overtly into account, and understands needs for what they are: value expressions. (Guba and Lincoln, 1981, p.20)

We agree with Guba and Lincoln and recommend that the role of values in the problem clarification process be acknowledged and studied. If the role of values is acknowledged then the developer and the planning partners or clients will be more likely to attend to their values as the process unfolds.

**Using Evaluation Models To Clarify Need**

How can we address Guba and Lincoln's challenge to deal with the problem of values in the needs assessment process. Evaluation models may offer the instructional developer some useful insights. First, many of the functions that occur in program evaluation also occur in needs assessment. Second, and most importantly evaluators seek frequently to improve what is – a notion that for evaluators consciously implies a value judgement.

Many different evaluation models are described in the literature: nevertheless, a measure of consensus does exist over a number of major evaluation approaches -- some characterized by a single evaluation model and some by several models. Worthen and Sanders (1987) provide a good summary of several of the major evaluation approaches. They identify six basic approaches: objectives-oriented,

management oriented, consumer oriented, expertise oriented, adversary oriented, and naturalistic and participant oriented. What follows is a cursory description of each evaluation approach and their possible use in needs assessment.

Objective-oriented Approach

The objective-oriented approach plays a prominent role in the development of educational evaluation. In fact, the field of educational evaluation was initially conceptualized in terms of behavioral objectives and determining a learner's ability to meet these objectives (Worthen and Sanders, 1987). Differences between stated behavioral objectives and observed behavior are seen as symptomatic of deficiencies in the educational innovation being evaluated. Deficiencies would ultimately lead to changes in the innovation in an effort to ensure that eventually the terminal behavior matched the stated objectives of the innovation.

The objective oriented approach probably has the greatest affinity with the problem identification approach presently used in instructional development and hence is not useful in suggesting new ways of problem clarification. As previously mentioned, the prevailing model adhered to by instructional developers during problem clarification seeks to characterize differences between present behavior and desired behavior in terms of behavioral objectives which form the basis for the subsequent design of instructional materials.

In many ways it can be argued that the other evaluation approaches discussed below have been developed in an attempt to address the perceived liabilities of the objective oriented approach. For this reason the subsequent approaches would appear to hold more promise for suggesting new ways of clarifying problems.

Management-oriented Approach

Management oriented approaches, like the CIPP (Context, Input, Process, and Product) model for example, are among the most widely used evaluation approaches. The primary concern of these kinds of evaluations is to provide information that is of use to decision makers. Thus the evaluator begins by clearly identifying the decisions a manager must make and then gathers information that will help the manager make these decisions.

Different kinds of evaluations have been suggested for different kinds of decisions. The CIPP model, for example, describes context evaluations (an evaluation that helps clarify the setting, goals and objectives of an intervention), input evaluations (an evaluation that clarifies procedural and budgetary plans of an intervention), process evaluation (an evaluation that identifies and corrects problems of an intervention while it is in progress), and product evaluation (an evaluation that clarifies whether to continue or modify an existing intervention and to present a clear record of how the intervention works).

Romiszowski (1981) has suggested that the instructional development process is very much like the one laid out in the CIPP model – and that a needs assessment is very much like the "context" evaluation presented in the CIPP model. Certainly, the description of a context evaluation offered by Stufflebeam (1968), sounds very much like what an instructional developer does during a needs assessment:

> Context evaluation would be used when a project is first being planned. The major objective of context evaluation is to define the environment where

> change is to occur, the environment's unmet needs and opportunities for change. Information from context evaluation leads ultimately to the establishment of program goals and objectives.

How might a context evaluation be undertaken to ensure that the "value systems of the planning partners and the instructional developer" are identified? It could be argued that a thorough context evaluation is much like an anthropological study – one that does not merely describe a context but a culture which is, by definition, value laden. This idea is not new. An anthropological approach to the study of values in the instructional development process has been put forward by Yeaman, (1990). The methods of the anthropologist may help to identify , describe, and attend to the values of the instructional developer, client, and stakeholder. Such an approach may also give the instructional developer insights into how the needs assessment process itself influences these different value systems.

Naturalistic and Participant Oriented Approach

Naturalistic and participant oriented evaluation approaches squarely place the emphasis of evaluation on describing and understanding, as fully as possible, how an intervention works within a specific context. Not surprisingly, therefore, the methods and tools of the anthropologist and very useful. This approach is in stark contrast to an objectives oriented approach. Understanding is achieved through a pluralistic inductive approach to evaluation. That is, the concerns of key stakeholders rather than decision makers are given particular attention. Also the use of more naturalistic and participant oriented data collection methods is emphasized. First hand experience is highly valued and the existence of multiple realities is readily accepted.

The naturalistic and participant oriented evaluation approaches, in our opinion, maybe especially well suited to problem clarification in instructional development. A naturalistic/participant oriented instructional analysis would be concerned primarily with describing and understanding a particular learning environment. It would place a heavy emphasis upon clearly understanding and being sensitive to the concerns of learners themselves rather than the needs of administrators or managers. Many of the data gathering methods used in such an approach show up in subsequent evaluation approaches. For example, the use of in depth interviews, focus groups, and panel discussions, are endemic to the expertise oriented and adversarial oriented evaluation approaches as well. An naturalistic and participant oriented evaluation approach to needs assessment would also rely heavily upon detailed observations of a settings. These "field notes" would help the developer assess the values of the key players involved in the process.

Expertise-oriented Approach

Arguably the oldest form of evaluation, an expertise-oriented approach relies on the knowledge and wisdom of qualified experts to assess the worth of something. Review panels, professional accreditation committees, movie and theater critics are all examples of evaluations made by an expert or a group of experts. Expert reviews vary widely with respect to the process followed. Some expert evaluations make explicit the criteria used to judge, time lines used in making judgments, conflicting opinions among experts, and the credentials of the experts, while others make none of these points explicit. For example, a panel of supreme court judges would be an example of a case where all of these points are made explicit when the

judgement is handed down. A dissertation committee would be a case where little additional information is given as to how a passing or failing grade was determined.

An "expert" needs assessment could be set up in much the same way as an expert evaluation. For example, a panel of experts could be asked to investigate a setting and suggest reasons students or employees are not performing adequately. Expert panels made up of individuals familiar with the setting being studied, could provide valuable information about the context -- internal conflicts, budget constraints etc. Blue Ribbon panels also might give an instructional development initiative added weight and credibility to those involved who may be resistant. An expert panel would also readily allow for a range of input and opinion while giving, possibly, key players a greater sense of ownership in the process. A problem clarification process patterned after a supreme court deliberation may be useful as well. One would be left with several expert views of what the instructional problem or problems might be as well as expert assessments of the value systems of the client and and how these shape a determination of the instructional problems. While an overall decision may be reached, the panel is not constrained to reach consensus. This may encourage multiple points of view and perspectives.

Consumer-oriented Approach

The consumer oriented evaluation approaches were developed so that individuals or agencies could readily assess the relative merit of a product they were planning to buy. Rating checklists are a typical method of undertaking these sorts of evaluations. A set of criteria are created for a particular type of product (criteria for a car might include: horsepower, breaking distance, and cost) . Several examples from a class of products are then compared with respect to these criteria. A consumer either uses the checklist to assesses a product's relative strengths and weaknesses or consults a report where someone else has actually rated a product using the evaluation criteria. The emphasis in this type of evaluation is to communicate in a simple straight forward manner whether a particular product is worth purchasing or not.

A consumer oriented approach to problem clarification suggests a check list of concerns that would be addressed during the instructional development process. This sort of checklist could serve as a starting point in a needs assessment. A properly created checklist might ensure that developers consider a number of different kinds of problems. The most important question in generating a checklist† is from where do the checklists come. It seems reasonable that they could come from either the expertise or naturalistic oriented approaches.

Adversary-oriented Approach

Adversary oriented approaches to evaluation attempt to minimize the bias inherent in all evaluations by incorporating planned opposition . By generating opposing points of view around a given issue it is hoped that a clear course of action will emerge. Fairness and balance are the driving forces behind these kinds of evaluations. Typically adversarial evaluations attempt to bring out the pros and cons of an issue; however, some kinds of evaluations, such as committee hearings, deliberately consider several viewpoints. Adversarial approaches, potentially, have much in common with other evaluation approaches such as expertise-oriented approaches because they rely heavily on the use of expert witnesses.

An adversarial form of problem clarification would be especially useful where two or more strongly competing opinions exist. Perhaps the strongest asset of an adversarial form of instructional analysis would be a recognition that different kinds of problems can be justified. It may also provide a forum for the discussion of multiple perspectives on the value systems of key players in the development process.

**Summary and Future Research**

Clearly the emphasis in this paper has been upon building a case for new approaches to needs assessment. While some practical suggestions have been made as to how a needs assessment may be patterned after a particular evaluation approach, more work needs to be done to make these suggestions more concrete. Certainly, data collection and data analysis procedures used in naturalistic kinds of inquiry such as those carried out by anthropologists should be considered by developers during needs assessments. Also, future work should attempt to assess the use of these new approaches in actual development projects.

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